Visual Aids

California Education and the Environment Initiative

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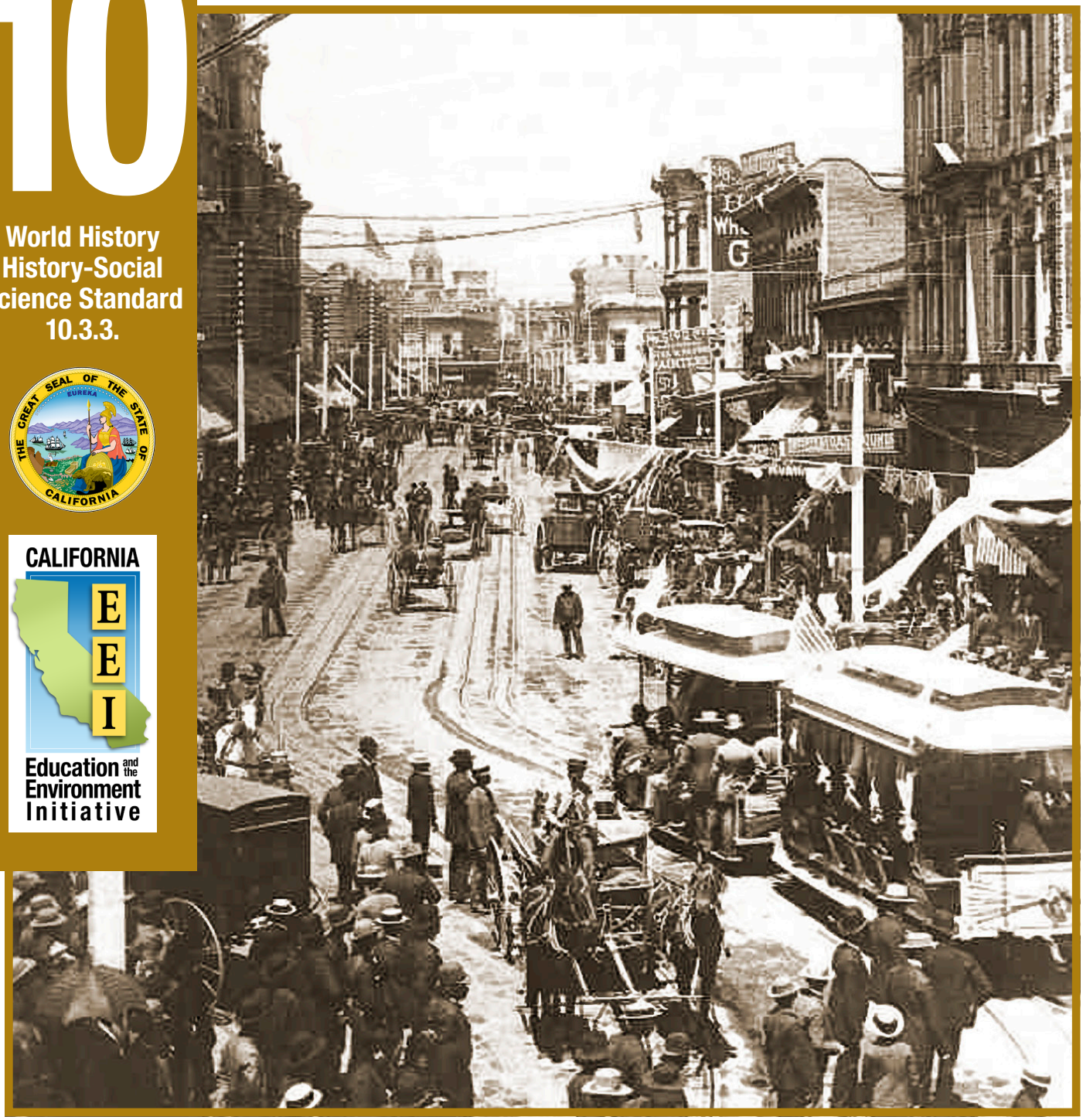
World History History-Social Science Standard 10.3.3.



Growth of Population, Cities, and Demands

California Education and the Environment Initiative

Approved by the California State Board of Education, 2010

The Education and the Environment Curriculum is a cooperative endeavor of the following entities:

California Environmental Protection Agency

California Natural Resources Agency

Office of the Secretary of Education

California State Board of Education

California Department of Education

California Integrated Waste Management Board

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Key Partners:

Special thanks to **Heal the Bay,** sponsor of the EEI law, for their partnership and participation in reviewing portions of the EEI curriculum.

Valuable assistance with maps, photos, videos and design was provided by the **National Geographic Society** under a contract with the State of California.

Office of Education and the Environment

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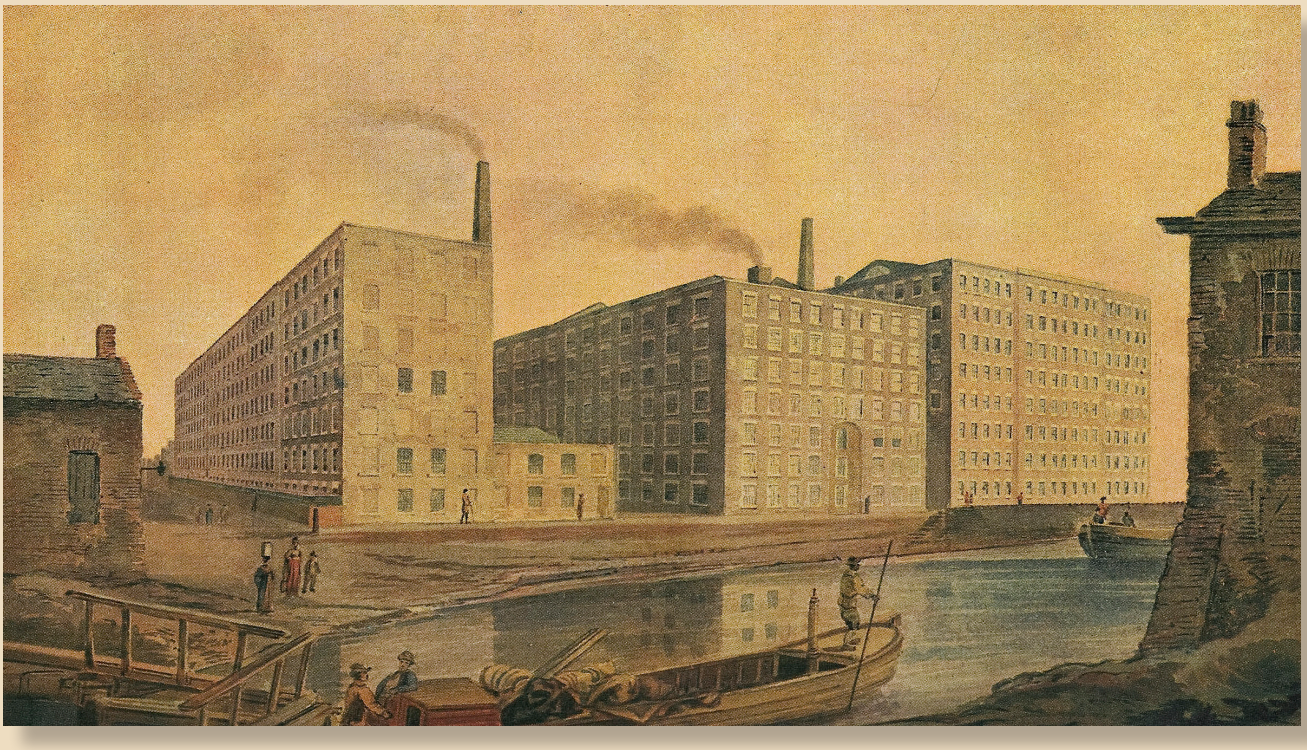
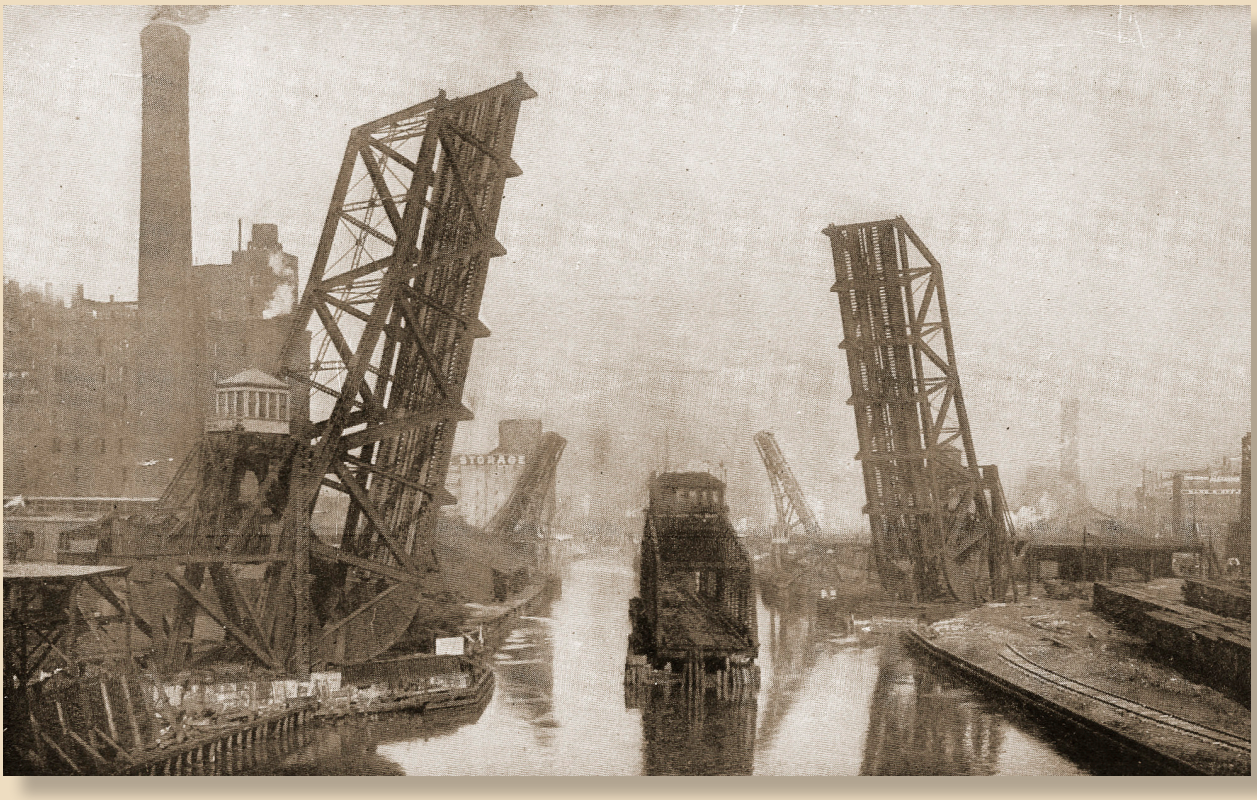
Relationship Between the Industrial Revolution and Population Growth:

VA #4 Manchester's Waterways



The city of Manchester, England, relied on rivers for many needs, including transportation and purification of waste.

VA #5 Chicago's Waterways



The Chicago River (ca. 1905) helped transport people and goods. It also carried Chicago's waste.

VA #6 Urbanization and Natural Systems

1. How did areas around cities and towns change as a result of industrialization?

2. What were the benefits gained by these new industrialized cities?

3. What were the challenges faced by these new industrialized cities?

4. How did industrialization and the population increase in urban areas affect the natural systems in and near these cities?

VA #7 The Alkali Act of 1863 and Robert Angus Smith

VA #8 Pollution in Chicago

VA #9 City of Chicago, 1880

VA #10 Clarke Letter

~C~

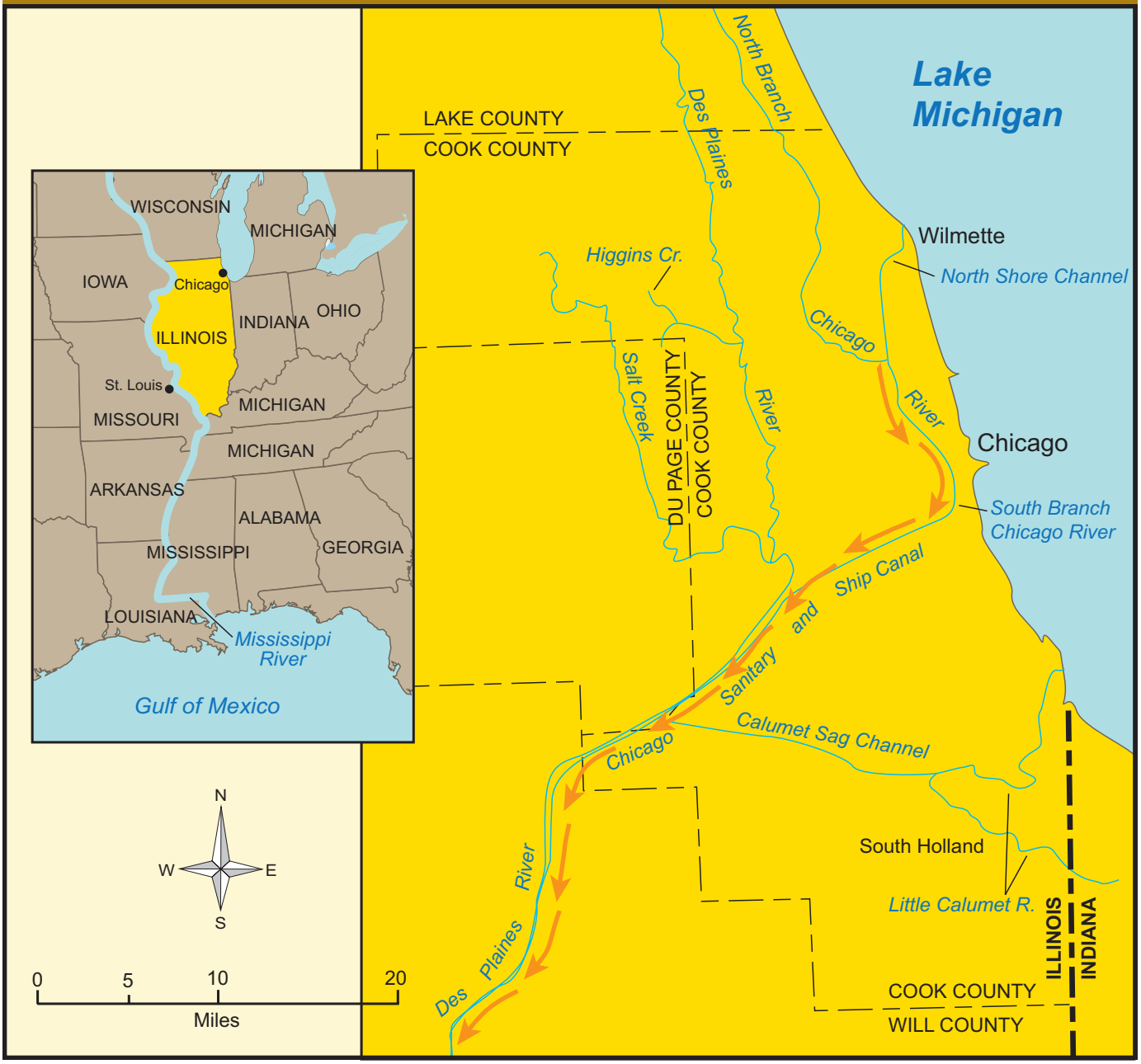
I am thus far much better pleased with Chicago than I expected…

I had expected to find the water very hard, but am as much disappointed in that as any one thing. The Lake water, which they use for almost every purpose, is as pure and good tasted as any I ever saw in my life. It is soft and washes perfectly well. To be sure they have the trouble of bringing it, but that costs only a shilling a barrel, which is nothing you know where they are in such a great way of doing business as they are here at Chicago.

VA #11 Chicago Water Crib

The water crib, two miles from Chicago in Lake Michigan, collected clean water and pumped it back to the city.

VA #12 Map of Chicago River Reversal



VA #13 Osgood Steam Shovel

Osgood Steam Shovel removed debris created in building the 28-mile drainage canal between Chicago and Lockport, Illinois (1896).

VA #14 Chicago Sanitary and Ship Canal Construction, 1899

The canal permanently reversed the flow of the Chicago River.

VA #15 Clean Water for Chicago

The Chicago River and Lake Michigan provide clean water for the city.

Industries and the city population grow quickly. More industrial and human waste is dumped into the Chicago River, which flows into Lake Michigan. As people drink water from Lake Michigan, some get sick; some die.

Common Council approves the building of a water crib (1865) to capture clean water two miles offshore, and to raise the city up, out of the swampy land.

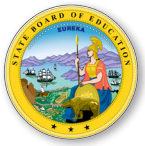
A rainstorm (1885) pushes sewage far into Lake Michigan, and people fear getting sick from unclean water. Illinois legislature passes the Sanitary District Enabling Act (1893) to create a district to address the problem. District begins to build the Chicago Sanitary and Shipping Canal to reverse the flow of Chicago River.

Flow of river is permanently reversed, and no sewage flows into Lake Michigan. Natural systems dilute the sewage diverted inland, making the water reasonably safe until water treatment plants are built in 1920.

VA #16 Map of the Rhine River

VA #17 Rhine River in Amsterdam

VA #18 Germany's Rhine



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